

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested in view of the above amendments and the following remarks.

Claims 1-8 and 10 are pending in this application. By this amendment, Claims 1, 4, 6 and 8 have been amended; Claim 10 has been added; and Claim 9 has been canceled. The amendments to independent Claims 1 and 8 find support, by way of non-limiting example, in the specification description page 11, lines 5-13, page 13, lines 3-13, page 14, line 22 to page 15, line 2, and page 15, lines 16-18. Other amendments of a formal nature have been made to place the claims in a preferred form for U.S. practice. Accordingly, it is respectfully submitted that no new matter has been added.

In the outstanding Office Action, Claims 1-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Background Art (specification page 1, line 14 to page 4, line 10, hereinafter “BA”) In view of Yoshikawa et al. (Phase Optimization of Kinoform by Simulated Annealing, Applied Optics, Vol. 33, No. 5; February 10, 1994, hereinafter “Yoshikawa”) and further in view of Payne et al. (US 2004/0021768 A1, hereinafter “Payne”).

Applicants hereby express appreciation for the grant of a personal interview on October 14, 2010. During the interview, the claims as then amended and the cited references were discussed in detail. During the discussion, the Examiner engaged in a detailed explanation of his reasoning why he remained firmly of the opinion that the rejection made in the outstanding Office Action presented a *prima facie* case of obviousness.

During the interview, an inadvertently erroneous argument was made regarding a statement asserted to have been made or, at least implied, in the outstanding Office Action. The argument was based upon confusion between the Examiner’s statements in this

application and statements made by another Examiner in a related application. In view thereof that inadvertent error is hereby withdrawn.

Regarding the inconsistencies between the recollections of Applicants' counsel and the Examiner of the discussion that occurred during the interview on May 28, 2010, it appears that miscommunications occurred and that recollections differ.

Taking into consideration the prosecution record to date as a whole, Claims 1 and 8 have been amended herein to clarify the recitations thereof and to more definitively define over the cited references. Therefore, Claims 1 and 8 have been amended as described below.

Claim 1 recites, in part:

a control image optimizing unit configured to:

calculate three-dimensional images corresponding to a group of control images based on information regarding the optical wavefront control unit in the form of constraints specifying a region of a three-dimensional image on which change of a pixel on the optical wavefront control unit has an effect;

select a control image corresponding to the three-dimensional image satisfying a predetermined condition from the group of control images; and

record the selected control image on the optical wavefront control unit, wherein,

the control image optimizing unit is configured to calculate a three-dimensional image ($g_0(x, y)$) with the inside of the visual region defined by the characteristics of a display device as a region to be calculated for each pixel of the initial solution ($U_0(k, l)$),

pixels constituting a control image have a uniform size, and

the size of the visual region formed by illuminating light of intensity above a certain level reaching the reconstructed image display unit is determined based on the amplitude of illuminating light passing through each pixel.

Claim 8 recites similar subject matter in method format. It is respectfully submitted that these features are neither disclosed by, nor rendered obvious by, BA, Yoshikawa, Payne, or the combination thereof.

The claimed invention has the advantages that an initial solution generating unit can assign random values to each pixel which constitutes a control image. Thus, an initial solution of the control image is generated of the phase distribution of each pixel. In this embodiment the control image optimizing unit is configured to determine the region to be calculated based on a range in which phase modulation is possible on the display device constituting a part of the optical wavefront control unit and the accuracy of phase modulation. The greater the amplitude of illuminating light passing through each pixel, the larger the size of a visual region formed by illuminating light of intensity above a certain level reaching the reconstructed image display. That is, the amplitude of illuminating light passing through each pixel becomes smaller when an applied voltage exceeds a given amount.

Payne describes a reconfigurable-three-dimensional display wherein knowledge of the viewer's eyes is used to enable the effective exit pupils of the display system to be optimized. Payne utilizes this knowledge to identify contributing regions within the display that contribute light to the viewer.¹ Thus Payne states that the invention is directed to "minimizing the computation time required to generate a Computer Generated Hologram (CGH)."² Payne refers to prior proposals for incorporating movable exit pupils within the system³ including head tracking⁴ and eye-position tracking⁵. Payne, however, is directed to positioning of effective exit pupils which requires no moving parts in the system.⁶

¹ Abstract.

² Paragraph [0001].

³ Paragraph [0006].

⁴ Paragraph [0007].

⁵ Paragraph [0009].

⁶ Paragraph [0018].

Payne states “[p]riority is given to calculating and displaying the part of the display corresponding to the contributing region.” Payne states “the control means determines the range of angles that sub-regions of the display means must direct light into to contribute to the image formed for the at least one viewing position and the pixel values of the display means are calculated such that priority is given to directing light into said range of angles.”⁷ Finally, Payne states “the bandwidth (range of spatial frequencies) of the fringes and coded into each hogel (holographic element) would be determined by the limited range of angles that each hogel is required to direct light into for a given viewer position.”⁸ Thus, Payne is directed to adjusting an angular range of a contributing region of an image based upon monitoring of the eye of the observer.

Payne does not describe calculation of three-dimensional images corresponding to a group of control images based on constraints which are information regarding an optical wavefront control unit and a condition restricting a reason to be calculated so as to calculate, on a control image basis, a three-dimensional image corresponding to the control image recording recorded in the optical wavefront unit, the region to be calculated being a region of the three-dimensional image affected by change of a pixel on the optical wavefront control unit as recited in Claims 1 and 8.

For the reasons described above, Payne fails to achieve these advantages because Payne fails to describe or render obvious the features of Claims 1 and 8 described above.

BA and Yoshikawa fail to correct the deficiencies of Payne described above, because neither of these cited references describes the features of Claims 1 and 8 quoted above.

It is respectfully submitted that dependent Claims 2-7 and 10 are patentable at least for the reasons argued above with regard to Claim 1 from which they depend.

⁷ Paragraph [0033].

⁸ Paragraph [0093].

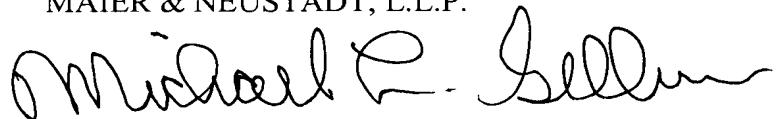
Accordingly, it is respectfully requested that the rejections of Claims 1-9 be reconsidered and withdrawn, and that Claims 1-8 and 10 be passed to allowance.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below-listed telephone number.

Respectfully submitted,

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